

Rivera Indarte – Libertad S.A.

First retail in Argentina to certify ISO 50.001 with IRAM



Case Study Snapshot	
Industry	Retail
Product/Service	Superstore & Mall
Location	Córdoba, Argentina
Energy performance improvement percentage (over the improvement period)	12% over the last 2 years (1 st of the 3 years considered as baseline-year)
Total energy cost savings (over the improvement period)	USD 45,000
Cost to implement Energy Management System (EnMS)	USD 29,000
Total energy savings (over the improvement period)	1814 GJ
Total CO₂-e emission reduction (over the improvement period)	243,000 Metric Tons

Organization Profile / Business Case

Libertad S.A. is a brand of superstores and malls having 15 of these locations in different provinces across Argentina. The facilities are comprised by superstores and shopping malls in the same building. Libertad belongs to the Casino Group, a French mass-market retail group.

In line with the 17 goals for sustainable development (United Nations Organization), the group’s corporate social responsibility policy has set 15 priorities: among them “Reduce greenhouse gas emissions” and “Increase energy efficiency”. The goal is to reduce scope 1 & 2 greenhouse gas emissions by 18% between 2015 and 2025; and scope 3 by 10% between 2018 and 2025.

Following this path, since 2018 the Libertad group set the goal of reducing their energy costs not only as a business strategy but as a way to reinforce its commitment to reduce its carbon footprint. Comparing the 2017 energy consumption with 2021, a 33% of energy reduction (year-to-year) has been achieved.

Rivera Indarte is the first branch store from Libertad S.A. to accomplish the ISO 50.001 certification. Based on the facility’s infrastructure, human resources and technology; it was chosen between the other 14 to start the certification process and became the first retail to achieve the ISO 50.001 certification by IRAM not only for the Libertad group but in Argentina. Based to these characteristics and lower gaps to accomplish the certification, the costs of implementation would be lower than in other stores. With an investment of 29,000 USD (staff hours, consultancy, audits and equipment) the certification was achieved. Having energy savings worth of 45,000 in the last two years, the project yielded to a one-year payback.

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Libertad expects that Rivera Indarte will be the first of many to certify ISO 50.001 and to take its methodology as a standard for the whole company. For this, the Consultancy company GB4A was hired to assist in the design and implementation of the Energy Management System (EnMS).

“This achievement reinforces our commitment regarding protecting the environment while doing business and will be a milestone for other retailers to follow our lead”

—Octavio Menso, Facilities Manager

Business Benefits

Achieving the ISO 50.001 certification brought business benefits that go beyond energy itself. Even though the main purpose on the EnMS was to use the energy more efficiently, the continuous improvement brought other benefits that were not completely forecasted.

Leadership in sustainable development: Rivera is the first retail store in Argentina to achieve an ISO 50.001 certification by IRAM. This is not something to be considered lightly in a country where energy costs are relatively low and environmental concern is not widespread established in costumers. Rivera has shown commitment with its community and implicitly invited others competitors to follow.

Costs reduction: considering the 2019 baseline (year of installation of the monitoring system), Rivera achieved a 10% and 12% energy costs reduction in 2020 and 2021 respectively. These savings account for a total of USD 45.000 improving the stores competitive advantage. The total EnMS expenditures for implementation were of USD 29.000, meaning that the system repaid for itself in just one year (but the benefits will last forever).

Carbon footprint: In the last two years, Rivera saved 243,000 tons of CO2 to be emitted to the atmosphere by saving energy. In terms of communication, this was presented in the monthly energy dashboard as a “trees needed to absorb CO2” measure. In this way, it was more tangible for employee and easy to imagine the real impact of saving energy. They claim that they even save more energy (and look more into detail) in their energy bills at home.

Know-how: before the certification no other than the facilities department was involved in energy efficiency and its environmental impact. The certification helped the whole store to be aware of the use of energy and how this affects the company’s competitive advantage and environmental impact. Communication through videos, posters and training sessions played a major role in this matter. Even in the facilities management department employees state that the certification process helped them to get more into the details of the facility in terms of the energy consumption, how machines (for example the refrigeration system) work and more.

Team building: achieving something for the first time in the country is an implicit medal that now every employee has. Testimonies, especially from those in the energy committee, show a new sense of pride and has strengthened human relationships.

Sinergy: the *plan-do-check-act* cycle is now a way of working. It is not limited to energy. This is something that happens because once people started working in this way, it is normal that some of them incorporate this methodology and apply it to other areas. Should any other ISO certification (ex: 14.001) be in process, it would be much easier to implement now than if the ISO 50.001 was never implemented.

EnMS Resiliency: the energy management system is now less dependent on the current employee. The documentation of procedures and historical data enables that future employee will catch up in a much easier way and will be able to run the EnMS. Furthermore, current employees have gained the experience to act as *Internal EnMS ambassadors* for the Libertad group.

Beyond Rivera’s boundaries: suppliers have also received training regarding energy conservation and can take this knowledge to their organizations. Furthermore, employees state that now they save more energy at their own homes. Before this certification, they claim that they were not aware on how they could save energy and help the planet with their own habits.

Plan

The ISO 50.001 certification was almost a natural path for Rivera. As stated before, Libertad started to work on their energy efficiency in 2018. Last year, the energy efficiency project was reaching a plateau (most of the “low hanging fruits” had been already addressed): it was more realistic from now on to maintain the good energy performance achieved rather than to expect large energy savings. The ISO 50.001 certification was proposed as a way to officially systematize the efforts from the last years. Even though we know that we were having good results, we needed a way to assure that those achievements would be sustained over time and that the information of our improvements would be documented with a defined methodology.

The top decision makers of Libertad are committed to develop the business in a more sustainable manner. In this way, the certification was perfectly aligned with this interest. When the ISO 50.001 was presented not only as a certification but as a way on how to work from now onwards, they engaged immediately and showed their support by participating in the launching meetings (at a corporate level) and providing the resources that we needed. It is important to mention that on their vision, Rivera is the first of (hopefully) many success cases in the group. For this reason, they have shown particular interest in the process of certification and the development of an EnMS that can be extrapolated to all the branch stores in an upcoming future. Even Rivera’s general director was part of energy committee (this was celebrated by IRAM, the certification entity, claiming that this was not something usual in other companies). This was a strong message towards the whole store that we, as the energy committee, had full support in this project.

We envisioned this certification as a process to engage all the employees (not just facility management staff) to contribute to the energy efficiency of the store. In that sense, we needed clear communication tools. We used two approaches: for corporate level and energy reporting we designed easy-to-read dashboards with the EnMS information including EnPIs, carbon footprint, SEUs, costs, etc. As energy was previously a topic that was not familiar for workers others than those from the facility management, we needed them to be nice, organized and use colors and icons for ease of interpretation.

For employees and suppliers, on the other hand, we had a different approach. We realized that not everybody would understand the technical concepts and that this could put engagement at risk. We decided to go for soft-tools as videos (shared in Whatsapp), posters and face-to-face communication and training sessions introducing the ISO certification, the EnMS, our goals and achievements.

To describe our energy consumption drivers, we first used historical billing data for every form of energy consumed in the store and mall: electricity, natural gas and oil. The thermodynamic analysis showed that electricity represented 93% of the energy consumption, and 96% in terms of costs. For this reason, the focus was put on this form of energy. The store incorporated electricity monitoring technology in 2019. The three main sources of energy consumption were identified (Lighting, AC and food refrigeration) and separately measured. In this way, each SEU (Significant Energy Use) was monitored individually. In total, we have eight: Lighting-Mall, Lighting-Superstore, AC-Mall, AC-Superstore, Refrigeration Driving-Force and Refrigeration Low, Medium and High-Temperature.

One of the most important premises that we had to consider was to work between three important boundaries: safety, quality and comfort. Not respecting this would create skepticism among other departments, workers and clients about the EnMS. Sometimes saving energy is confused with using the energy efficiently. This, in the context of a country like Argentina where people are not too much aware of the concepts of energy efficiency, could put the energy efficiency

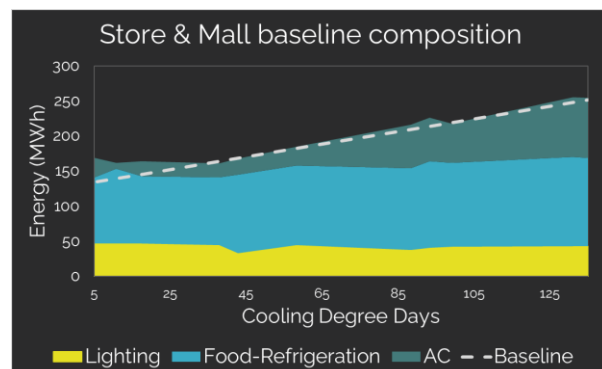
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project in risk. First, we are not willing to take energy conservation measures in safety related installations that are meant for occasional use (for example, the water pumps of the fire control system). Second, saving energy relegating product quality would be a major mistake, affecting the retailers and sells. For example, this could happen if, aiming to save energy in the cooling cameras, the food was not refrigerated properly, leading to food quality issues. Last, light and temperature levels in the room should always be kept optimal. In this sense, every EnPI and control chart was designed to work between these considerations. For example, only an AC—EnPI based on how much energy is consumed could lead to workers to turn off the AC, leading to poor comfort conditions. To avoid this behavior, another EnPI based on comfort was added. This “comfort EnPI” would show a deviation if the AC was not turned on when needed. In this way, if the AC was turned on in a cold day (unnecessary), the AC-Energy EnPI would show a deviation. Thus, both EnPIs would work simultaneously and assure that the AC was turned on when needed.

“The ISO certification helped us, people who are not part of the facilities department, to be aware of the importance of saving energy”
—Marina Correa, Administration Manager



Baseline. Three components: Lighting, Air Conditioning and Food-Refrigeration

Do, Check, and Act

The most important part for the implementation was to create a good team: the energy committee is comprised by employees from different departments, backgrounds, genders and hierarchies. We meet once a month to discuss every ongoing project, review the monthly dashboards and evaluate the EnPIs (Energy Performance Indicators) monthly results.

Our diversity is a key strength when assigning tasks and responsibilities. For example, when encouraging customers and employees to share suggestions on how to save energy, this channel is better handled by (and assigned to) our Administration Manager (part of the energy committee), while other operational checking (for example, midnight temperature check) were assigned to the security supervisor (also part of the committee).

Every meeting is documented: energy measurements presentation, dashboards, on-course implementations and post-meeting summary. The top management receives this documentation via email and holds one meeting per month with the energy consultant (the company GB4A) to follow-up on the Rivera’s EnMS.

The election of the baseline period was determined by the month of the installation of the monitoring system (may-2019). The first 12 month (may-19 to apr-20) were used to build the baselines for each SEU and the following 24 month (from may-20 to apr-22) were used to calculate energy savings. Even though energy savings, based on energy bills, have been reported from the beginning of the commercial relation between GB4A and Libertad (2018), the reports (as stated in ISO 50.001) started on June 2021 (12 months) and are divided in three parts: First, the energy committee gathers monthly and evaluates the monthly results reported in the dashboard. Second, at the same time, GB4A reports these results to the Libertad Group’s Facilities Manager. Finally, every 6 months the EnMS goes through the revision by the director, GB4A and the Facilities Manager not only reviewing the monthly reports but the whole EnMS in terms of results, procedures and action plan implementations.

For the creation of the dashboards, baselines and control charts data processing was vital. Every deviation is tracked and subjected to analysis. After determining the root causes of the deviations, the committee designs action plans including goals, dates, a responsible and resources.

Among some of the most important implementations to save energy, determined by the SEUs, where: repaired refrigeration cameras’ door, changed refrigeration compressor in Low-Temperature for a dynamic pressure system, changed lighting from fluorescent to LED technology in the entire facility, dimerized lighting in superstore and mall to take advantage of sunlight, set up automatic control on ACs based on time and temperature, etc. There were also soft measures: an energy efficiency contest, a yearly power purchase optimization study, training sessions on energy efficiency in refrigeration for suppliers and employees working on refrigeration cameras, etc.

To plan these implementations, it was not only necessary to determine the SEUs but the variables that defined their energy consumption. The commercial activity in the store has different variables that will affect the energy performance. These variables we identified for each SEU: AC is mainly determined by temperature, humidity, number of people, number of appliances/machines turned on in the store and mall, the metabolic activity of people, wind, sunlight, building orientation, insulation and envelope. For refrigeration, the variables are temperature, humidity, amount of food, type of food, freezing state, metabolism of food, temperature of food when entering the cameras, rate by which costumers return the product to the fridge, time the costumers/employees keep the doors of the cameras/fridges open and cameras/fridges insulation. Lighting is determined by the commercial hours, cloudiness, working hours and season. The identification of these variables was the foundation not only for the implementations but also for training the personnel and suppliers.

Whenever we do some implementation, performance improvements are verified by comparing the SEUs baselines and/or EnPIs before and after the implementations. Yearly savings follow the same method, but using the total EnMS baselines. Based on these measurements and the cost of the kWh, savings can be precisely quantified. Another important method to prevent or react to deviations are the control charts used for every SEU. On the other hand, deviations on planning are also important to identify for delayed projects. If any, these issues are discussed in the committee’s meeting and track is kept in the projects planning follow up table.

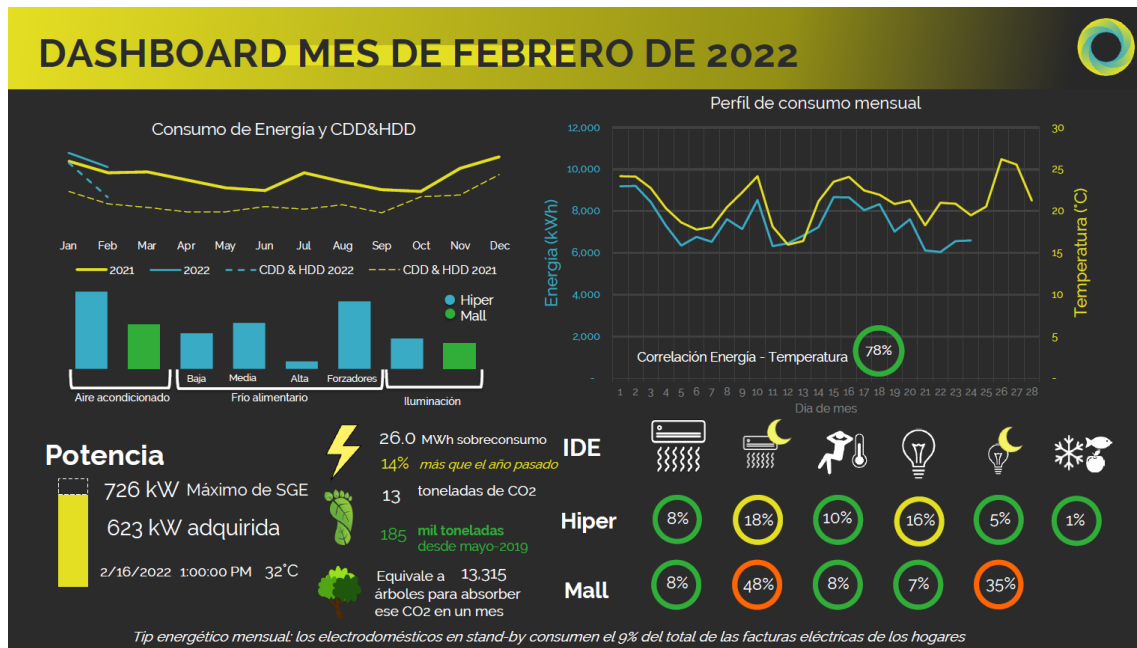
Energy savings are calculated based on the facility’s total consumption in comparison with its baseline (individual SEU and/or total store & mall can be calculated). Even though there are multiple variables than explain the energy use in a commercial building (as mentioned before), there is a need of a balance between objectiveness and understandability (especially for non-technical members of the committee and management). Because of this, the most significant variable was chosen as the independent to predict energy consumption: cooling degree days (CDD). Even though lighting is not determined by CDDs, this SEU is relatively constant during the month (see figure in page 4) and can be considered as part of the building’s base consumption (intercept “b” in $y=mx+b$ equation). On the other hand, AC and food refrigeration have shown a strong linear relation with CDD. The total store & mall baseline was mostly use to communicate with the management authorities of Rivera and Libertad.

Individual energy savings were calculated for each SEU expected energy consumption (from their individual baseline) as follows:

$$\text{Individual Energy savings (\%)} = \frac{\text{Energy Expected (baseline)} - \text{Actual Energy consumed}}{\text{Energy Expected (baseline)}}$$

Individual savings for lighting, AC and food refrigeration were accounted and a cumulative summation led to total energy savings

$$\text{Total Energy savings} = \sum_{i=0}^{SEU} (\text{Individual energy savings})_i$$



Monthly dashboard used by the energy committee to evaluate monthly energy performance

Transparency

The certification was recently approved (may 10th, 2022). We have communicated it internally in the Libertad’s Instagram account (1100 out of 3000 employees are followers) and the internal newsletter “Conectados”. However, the formal event (with press and IRAM authorities) will be held on June. We plan to advertise it in social media (LinkedIn and Instagram) and post it on the awards section of the store.

What We Can Do Differently

Looking backwards, I believe that we could have started to communicate the certification process earlier. Even though in my opinion we did a good job with the posters and videos, the EnMS may have been easier to design with all the employees being aware of the project from the very beginning. We waited until we had a solid methodology in the energy committee to share with the rest of the people of what the certification was about. This brought some delays in the organization of the certification. For example, the commercial department was concerned that we would suggest energy conservation measures that could put comfort of costumers at risk. Even though we had designed our EnPIs to assure thermal comfort, the communication video where we explained this was released later. In that sense, we found a resistance that could have been avoided. Not communicating well, or at the right time, could have been considered as a reactive response to this concern, when it was actually something that we had carefully considered before.

The data processing could have been done in a more agile manner too. Some data took lots of time to process and to prepare the graphs. However, when presented to the committee most agreed that that information was of no use and the idea had to be dismissed or changed. Maybe we could have done more meetings and brainstorming before processing the data to avoid wasting time.

The next step for Rivera is to continue improving the Energy Management System and we look forward to integrate it with the ISO 14.001 certification. We expect Rivera to be the reference for the whole company as a leader in terms of energy efficiency and environmental impact mitigation.



The Energy Management Leadership Awards is an international competition that recognizes leading organizations for sharing high-quality, replicable descriptions of their ISO 50001 implementation and certification experiences. The Clean Energy Ministerial (CEM) began offering these Awards in 2016. For more information, please visit www.cleanenergyministerial.org/EMAwards.